

FACT SHEET

United States Environmental Protection Agency
Region 10
Park Place Building, 13th Floor
1200 Sixth Avenue, WD-134
Seattle, Washington 98101
(206) 553-1214

Permit No.: WA-002028-1

Date:
January 21, 1993

PROPOSED REISSUANCE OF A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE POLLUTANTS PURSUANT TO THE PROVISIONS OF THE CLEAN WATER ACT

CITY OF COULEE DAM

has applied for reissuance of a National Pollutant Discharge Elimination System (NPDES) permit to discharge pollutants pursuant to the provisions of the Clean Water Act. This fact sheet includes (a) the tentative determination of the Environmental Protection Agency (EPA) to reissue the permit, (b) information on public comment, public hearing and appeal procedures, (c) the description of the current discharge, (d) a listing of tentative effluent limitations, schedules of compliance and other conditions, and (e) a sketch or detailed description of the discharge location. We call your special attention to the technical material presented in the latter part of this document.

Persons wishing to comment on the tentative determinations contained in the proposed permit reissuance may do so by the expiration date of the Public notice. All written comments should be submitted to EPA as described in the Public Comments Section of the attached Public Notice.

After the expiration date of the Public Notice, the Director, Water Division, will make final determinations with respect to the permit reissuance. The tentative determinations contained in the draft permit will become final conditions if no substantive comments are received during the Public Notice period.

The permit will become effective 30 days after the final determinations are made, unless a request for an evidentiary hearing is submitted within 30 days after receipt of the final determinations.

The proposed NPDES permit and other related documents are on file and may be inspected at the above address any time between 8:30 a.m. and 4:00 p.m., Monday through Friday. Copies and other information may be requested by writing to EPA at the above address to the attention of the Water Permits Section, or by calling (206) 553-1214. This material is also available from the EPA Washington Operations Office, c/o State of Washington, Department of Ecology, St. Martin's College Campus, Lacey, Washington 98504.

Technical Information

I. Permittee

City of Coulee Dam
P.O. Box 156
300 Lincoln Street
Coulee Dam, Washington 99116

NPDES Permit No.: WA-002028-1

II. Facility Location and Activity

The City of Coulee Dam operates a publicly owned waste treatment facility (POTW). The POTW is located on Beaver Drive, within the exterior boundaries of the Colville Indian Reservation. A location map is included as Attachment A. The facility provides secondary treatment for an estimated service population of 1,500-2,000. The facility accepts conventional pollutant loads and generates sewage sludge. A 10" dual ported pipeline extends approximately 60 feet into the Columbia River. Treated wastewater is discharged at this location below Grand Coulee Dam. The sludge is disposed of by land application. A facility diagram is included as Attachment B.

This permit regulates only discharges that are considered or presently known to be point sources as defined in 40 CFR 122.2.

The City of Coulee Dam applied for permit reissuance on July 27, 1990.

III. Receiving Waters

Surface water discharges-from the facility enter into the Columbia River (Waterway Segment Number: 26-04-00). The legal description of the discharge location is the SE 1/4 of the NE 1/4 of Section 36, Township 29N, Range 30 E.W.M. in Okanogan County on the Colville Indian Reservation.

EPA promulgated federal water quality standards for the Colville Indian Reservation. The applicable water quality standards are found at 40 CFR Part 131.35. The Columbia River from Grand Coulee Dam to Chief Joseph Dam is identified as Class II (Excellent) waters. The identified beneficial uses include domestic, industrial and agricultural supply; stock watering; fish and shellfish migration, rearing, spawning and harvesting; wildlife habitat; ceremonial and religious use; recreation; commerce and navigation. Discharges in-compliance with limitations contained in this permit should not result in degradation of beneficial uses.

IV. Background

The POTW is owned and operated by the City of Coulee Dam. It was

built in 1972 and modified in 1978 to accommodate sewage from Elmer City. The facility was evaluated as a part of the 1978 upgrade and was found to have the following design capacities:

Flow: 0.503 mgd
 Peak Flow: 1.886 mgd
 BOD: 1000 lbs/day
 Population Equivalent: 3,2000 people

The facility presently serves a population of 1,600. The POTW provides for secondary treatment and has one discharge point to the Columbia River. The facility does not receive industrial waste.

During 1990, the POTW had the following average quality for influent and effluent parameters (from Discharge Monitoring Reports):

Flow: 0.252 mgd
 BOD
 Influent: 95 mg/l
 Effluent: 2 mg/l (98% removal)
 TSS
 Influent: 112 mg/l
 Effluent: 3 mg/l (97% removal)
 Fecal Coliform
 Bacteria: 10/100 ml

Sewage sludge (bio-solids) is held in a settling tank. It is pumped into a truck for seasonal disposal by land application. The disposal sites presently have not been located on the Colville Indian Reservation, but in Grant County. The Grant County Health Department issues permits for bio-solid disposal in Grant County.

V. Effluent Limitations

Listed below are the proposed effluent limitations, monitoring frequencies, and the basis for each limitation. Monitoring frequencies may be changed by permit modification as necessary, if shown to be inadequate for determining compliance with effluent limitations.

DISCHARGE LIMITATIONS

<u>Effluent Parameter</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Weekly Average</u>	<u>Monitoring Frequency</u>	<u>Limit Basis</u>
Flow	mgd	0.503	N/A	Daily	A
BOD ₅	mg/l	30	45	Weekly	B
	% removal	85			
TSS	mg/l	30	45	Weekly	B
	% removal	85			
Enterococci Bacteria*	#/l	16/100	N/A	Weekly	C

Chlorine						
Residual	mg/l	0.5	N/A	Daily		D
pH	S.U.	Range of 6.5 to 8.5		Monthly		E
Sludge				Annual		F

*No single sample shall exceed 75/100 ml

A. Flow

The limitation on flow has been determined by POTW design capacity that was evaluated in 1978. The facility uses a continuous recorder for flow monitoring to take daily readings.

B. Biochemical Oxygen Demand (BOD₅) Total Suspended Solids (TSS)

The BOD₅ and TSS limitations are specified in the Secondary Treatment Requirements for Municipal Dischargers (40 CFR Part 133). BOD₅ is a 5 day measure of the parameter Biochemical Oxygen Demand. BOD₅ and TSS are 24 hour composite sampling computed by an arithmetic mean of the samples taken. The permit limitations for BOD₅ and TSS are calculated based on the facility design flow (40 CFR Part 122.45 (b)) and the concentration limits specified. The proposed permit limits are calculated as follows:

Monthly Average:

$$.503 \text{ mgd} \times 30 \text{ mg/l} \times 8.34 \text{ lb/g} = 126 \text{ lbs/day}$$

Weekly Average:

$$.503 \text{ mgd} \times 45 \text{ mg/l} \times 8.34 \text{ lb/g} = 189 \text{ lbs/day}$$

C. Enterococci Bacteria

The Bacteria limitations are specified by the Water Quality Standards for the Colville Indian Reservation in the State of Washington (40 CFR Part 131.35). The Enterococci bacteria standard is based on a geometric mean of samples equally spaced over 30 days. The Enterococci bacteria is a subgroup of the fecal Streptococcus group of bacteria.

The approved test method for Enterococci sampling is found in an EPA Office of Research and Development Methods document, Test Methods for Escherichia coli and Enterococci in Water By the Membrane Filter Procedure (EPA 600/4-85-076). This testing method shall be used in the Enterococci bacteria sampling.

Secondary Treatment Requirements for Municipal Dischargers for fecal coliform bacteria are 200 colonies/100 ml for monthly average and 400 colonies/100 ml weekly average (40 CFR Part 133). EPA policy for calculating permit limits requires that a permit contain the more

stringent of two applicable limits. The standard for enterococci bacteria is being used in this permit.

The facility has not exceeded the secondary treatment bacteria Standard during operation under the previous permit issued in 1985. The applicable Colville Standards were promulgated in 1988. It is not expected the effluent discharge will exceed the Colville standard for bacteria.

D. Total Chlorine Residual

In the March 9, 1984, Federal Register (49 FR 9016), EPA issued the national "Policy for the development of Water Quality-Based Permit Limitations for Toxic Pollutants." This policy addresses the technical approach for assessing and controlling the discharge of toxic pollutants through the NPDES permit system. It requires the protection against toxic impacts from discharges to the receiving waters through the NPDES permits by including chemical specific effluent limits and/or toxicity testing.

Residual chlorine was evaluated to determine if this toxicant had a reasonable potential to cause water quality impacts (exceedence of water quality standards). Chlorine discharges were reviewed in light of current toxicity information and water quality criteria. Chlorine has been found to be a major cause of toxicity in municipal effluent. In aquatic environments, acute toxicity due to chlorine has been found to occur at very low levels. EPA's Quality Criteria for Water (1986) lists national criteria for instream chlorine levels.

These criteria take into account the initial insult of a pollutant on the aquatic system and the subsequent recovery time. For chlorine, the acute instream criterion is 0.019 mg/l, and the chronic instream criterion is 0.011 mg/l.

Chlorine limits were evaluated using the EPA Quality Criteria for Water and a methodology developed by EPA in the Permit Writer's Guide to Water Quality-Based Permitting for Toxic Pollutants (EPA, 1987). This methodology takes into account the criteria, effluent variability, and the number of observations that will be taken to determine compliance with the limit. Using this method, the water quality-based limits are calculated.

The calculations of these limits are included in Attachment C. The outfall proximity to the base of Grand Coulee Dam produces a high mixing ratio (Columbia River flow/effluent discharge). EPA used 10% of the river's flow for evaluation of potential water quality impacts from this discharge. The resultant mixing ratio is $(.1 \times 19355 / .503) = 3,850:1$. Flow figures used in the calculations are obtained from U.S. Bureau of Reclamation records for the Columbia River at Grand Coulee Dam. The calculated water quality-based limits for chlorine are:

9.14 mg/l daily maximum
5.11 mg/l monthly average

However, the technology-based limit for chlorine is 0.5 mg/l. This technology-based effluent limit is derived from standard operating practices. The Water Pollution Control Federation's Chlorination of Wastewater (1976) states that a properly designed and maintained wastewater treatment plant can achieve adequate disinfection if a 0.5 mg/l chlorine residual is maintained after 15 minutes of contact time. A treatment plant that provides adequate chlorination contact time can meet the 0.5 mg/l limit on a monthly average basis.

The EPA policy for calculating the permit limits requires that a permit contains the more stringent of the two limits. Since the technology-based chlorine limit is more stringent than the water quality-based limits, a monthly average of 0.5 mg/l is used in the proposed permit.

E. pH

The pH range is specified by the Water Quality Standards for the Colville Indian Reservation in the State of Washington (40 CFR Part 131.35).

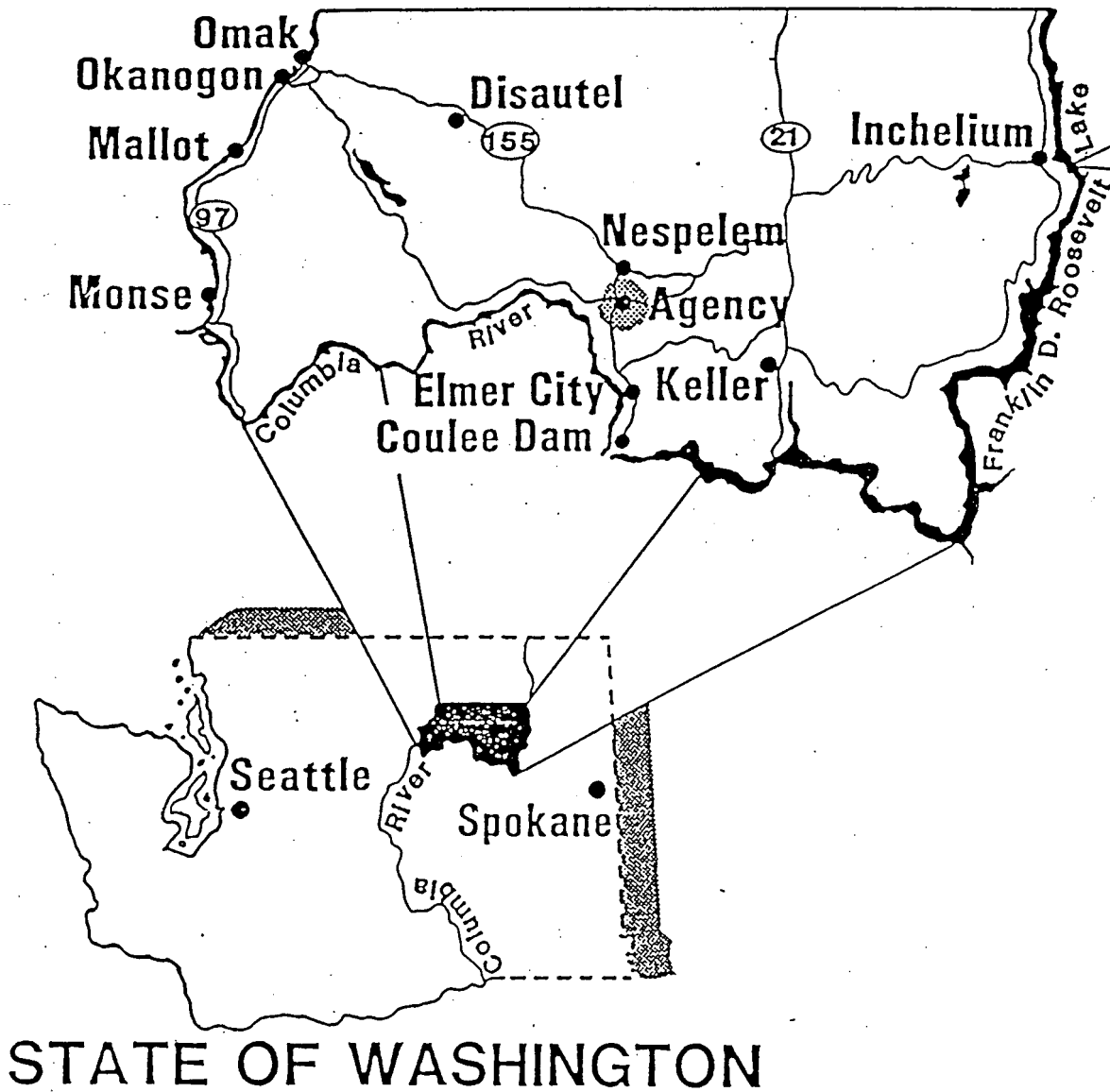
F. Sludge

Sludge shall be sampled for arsenic, mercury, molybdenum, selenium, cadmium, chromium, copper, lead, nickel, and zinc on an annual basis. Results shall be reported as total (mg/kg dry weight) for each metal, and be submitted with the Discharge Monitoring Report.

Currently, all sludge is being land applied as a fertilizer or soil amendment in Grant County under a permit from the county health department. It is expected this will continue. Should the city wish to use or dispose of the sludge within the Colville Indian Reservation, the city would have to submit to the Environmental Protection Agency the land application plan and other information listed in 40 CFR 501.15.

Discharges in compliance with the proposed effluent limitations are anticipated to cause no violations of applicable water quality standards or degrade associated beneficial use.

COLVILLE INDIAN RESERVATION



ATTACHMENT B: City of Coulee Dam

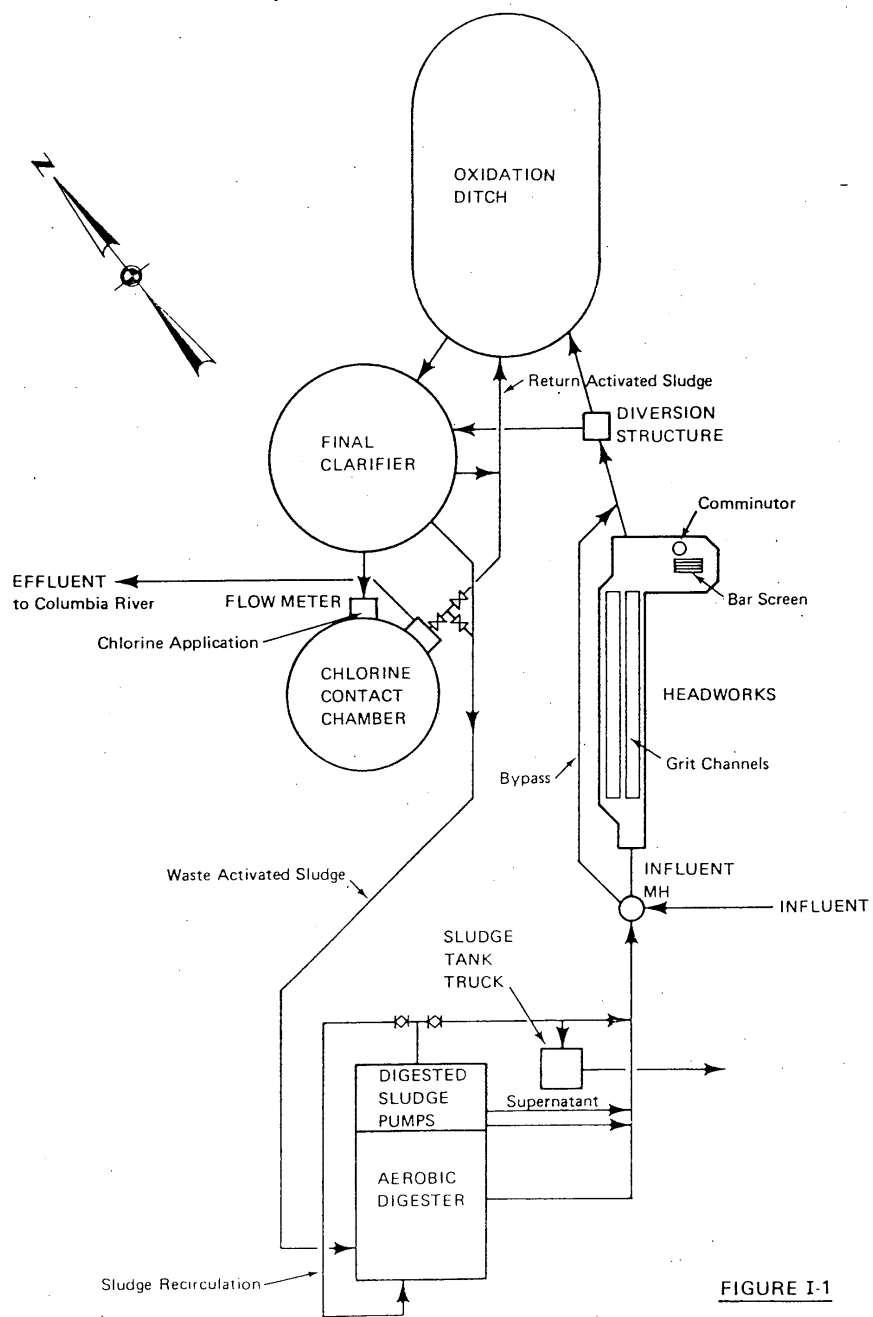


FIGURE I-1
BASIC FLOW DIAGRAM

ATTACHEMENT C

Chlorine Limitation Calculation (City of Coulee Dam)

1. Determine the chronic waste load allocation (WLA_c)

- Assume:
- (1) 10% of receiving water flow for mixing
 - (2) 7Q10 low flow equals 19355 mgd
 - (3) effluent flow equals 0.503 mgd (design flow)
 - (4) no upstream chlorine

$$WLA_c = \frac{[(.10) (Q_{stream} + Q_{effluent})] (C_{std})}{Q_{effluent}}$$

Where:

WLA_c = chronic waste load allocation
 Q_{stream} = receiving stream 7Q10 low flow
 $Q_{effluent}$ = effluent flow, and
 C_{std} = chronic standard for chlorine (0.011 mg/l)

$$WLA_c = \frac{[(.10)(19355) + 0.503] (0.011)}{0.503}$$
$$= 42.34 \text{ mg/l}$$

2. Determine the acute waste load allocation (WLA_a)

- Assume:
- (1) 10% of receiving water flow for mixing
 - (2) 1Q10 low flow equals 3548 mgd
 - (3) effluent flow equals 0.503 mgd (design flow)
 - (4) no upstream chlorine

$$WLA_a = \frac{[(.10) (Q_{stream}) + Q_{effluent}] (C_{std})}{Q_{effluent}}$$

Where:

WLA_a = chronic waste load allocation
 Q_{stream} = receiving stream 1Q10 low flow
 $Q_{effluent}$ = effluent flow, and
 C_{std} = chronic standard for chlorine (0.019 mg/l)

$$WLA_c = \frac{[(.10)(3548) + 0.503] (0.019)}{0.503}$$
$$= 13.42 \text{ mg/l}$$

3. Convert the acute and chronic WLAs to long-term averages(LTAs)

The LTAs are calculated using the procedures established in the Permit Writer's Guide to Water Quality-Based Permitting for Toxic Pollutants. July 1987 (PWG).

$$\begin{aligned} \text{LTA}_a &= 13.42 \times (.32) = 4.29 \text{ mg/l} \\ \text{LTA}_c &= 42.34 \times (.61) = 25.83 \text{ mg/l} \end{aligned}$$

A coefficient of variation of 0.6 was assumed for this calculation.

4. Derive the maximum daily and monthly average chlorine limits utilizing the most stringent LTA, using the procedures in the PWG.

The acute LTA is more stringent.

$$\begin{aligned} \text{Maximum Daily} &= 4.29 \times (2.13) = 9.14 \text{ mg/l} \\ \text{Monthly Average} &= 4.29 \times (1.19) = 5.11 \text{ mg/l} \end{aligned}$$

Note that the monthly average calculation is based on a daily chlorine monitoring frequency.